

REMARKS

Claims 2, 4, 5, 7, 9-11 and 13-17 are pending. Claims 2, 4, 7, 13, 14 and 17 are currently amended.

Claim 2 was rejected under 35 U.S.C. §103(a) as being unpatentable over JP-07-060074 ("JP '074") in view of U.S. Patent No. 6,156,200 (Zha et al.) and JP-04-110023A ("JP '023").

Claim 2 has been amended to recite that the filter device is adapted to continuously pressure-eject raw fluid and gas to flutter, spread and vibrate the hollow fiber membranes during a filtering process. Support for that amendment can be found, for example, on page 12, line 24 – page 13, line 20. No new matter has been added.

Implementing such features may enable the continuous removal of deposits from the hollow fiber membranes during the filtering process. That continuous removal may extend the time that a filter device can continue filtering without requiring a suspension of filtering to clean (*i.e.* backwash) the filter. Additionally, implementing such features may allow raw fluid to permeate deeply through the hollow fiber membranes, thereby increasing the filter's efficiency. None of the asserted references either alone or in combination discloses or suggests the features recited in claim 2.

JP '074 discloses a hollow fiber membrane module with a housing 6. A plurality of hollow fiber membranes 7 having attached ends and free ends are positioned inside the housing. Ports are provided for introducing air (port 4) and fluid (port 1). (*See* FIG. in abstract) The hollow fiber membrane module includes a funnel shaped outlet 2. FIG. 6 of the Zha et al. patent discloses a porous tube 16 positioned in approximately the center of a membrane module 4. JP '023 discloses a baffle 27 inside a filtration tower 9 and a space inside the filtration tower 9 that is below the baffle 27. (*See* FIG. in abstract)

The Office Action states that it would have been obvious to combine the Zha et al. patent with JP '074 and introduce liquid and gas to the center of a bundle of hollow fiber membranes for proper distribution of liquid or gas and for improved agitation of the hollow fibers. (*See* Office Action, page 2 -3) Applicants disagree because the asserted motivation to combine those

references is insufficient and because, even if the asserted references were combined in the manner suggested, the subject matter of claim 1 would not result.

No Motivation to Combine

A claimed invention is unpatentable due to obviousness if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the art." 35 U.S.C. § 103(a).

As discussed by the Court of Appeals for the Federal Circuit, a proper conclusion of obviousness under 35 U.S.C. § 103 requires that there be some motivation in the prior art that suggests the claimed invention as a whole:

[A]n Examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." [Citations omitted] To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show motivation to combine the references that create the case of obviousness.

In re Rouffet, 149 F.3d 1350, 1357; 47 USPQ2d 1453, 1457-1458 (Fed. Cir. 1998). As further explained by the Federal Circuit:

Our case law makes clear that the best defense against hindsight-based obviousness analysis is the rigorous application of the requirement for a showing of a teaching or motivation to combine the prior art references. See *Dembiczak*, 175 F.3d at 999, 50 USPQ2d at 1617. "Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight." *Id.*

“When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references.” *In re Rouffet*, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998) (citing *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987)).

Ecolochem, Inc. v. Southern California Edison Co., 56 USPQ2d 1065, 1072-73 (Fed. Cir. 2000).

The showing of the motivation to combine must be “clear and particular.” *See, e.g., C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998); *Teleflex, Inc. v. Ficosa North Am. Corp.*, 63 USPQ2d 1374 at 1387 (Fed. Cir. 2002).

The Office Action failed to show the requisite clear and particular motivation to combine the asserted references in the manner suggested.

Instead, the Office Action merely states that the motivation to combine would have been a desire for proper distribution of liquid or gas and for improved agitation of the hollow fibers. However, the translation of JP ‘074 (previously submitted with the Reply to Action of August 19, 2004) does not even mention proper distribution of liquid or gas and actually teaches away from using an ejection stream of raw fluid and gas to flutter, spread and vibrate the hollow fiber membranes during a filtering process. Indeed, the translation states that “[a]fter the filtration process has been carried out for a certain amount of time, dirt, SS particles, etc. adhere to the surface of the hollow fiber membranes 7 causing a drop in filtration speed. In order to remove the dirt, etc. that adhered to the surface and thereby restore filtration speed, a backwash process is carried out.” (See page 3, last paragraph) In view of the foregoing statement a person of ordinary skill in the art would not have been motivated to create a filter device that flutters, spreads and vibrates hollow fiber membranes using an ejection stream of raw fluid and gas during a filtering process, because that person would have understood that a backwash process (separate from a filtering process) was used to removed dirt, etc. from the hollow fiber membranes.

Similarly, the Zha et al. patent also fails to provide the requisite motivation to combine. Indeed, the Zha et al. patent also teaches away from fluttering, spreading and vibrating hollow fiber membranes using an ejection stream of raw fluid and gas during a filtering process. Specifically, the Zha et al. patent states “[p]referably, the fibre membranes are arranged in bundles surrounded by a perforated cage which serves to prevent said excessive movement therebetween.” (See column 2, lines 22-25) Additionally, the Zha et al. patent provides potting heads 6, 7 at upper and lower ends of the fibers 9 that appear also to prevent the fibers 9 from moving. (See FIG. 1) In view of the foregoing statements, a person of ordinary skill in the art would not have been motivated to create a filter device that uses an ejection stream of raw fluid and gas to flutter, spread and vibrate hollow fiber membranes during a filtering process, because that person would have understood that it was preferable for the fiber membranes not to move.

JP ‘023 also fails to provide the requisite clear and particular motivation to combine the asserted references in the manner suggested.

For at least the foregoing reasons, Applicants submit that the requisite clear and particular motivation to combine JP ‘074, the Zha et al. patent and JP ‘023 has not been shown.

Even if JP ‘074, the Zha et al. Patent and JP ‘023 Were Combined in the Manner Suggested, The Subject Matter of Claim 1 Would not Result

Neither JP ‘074, the Zha et al. patent, JP ‘023, nor the asserted combination of those references discloses a filter device that is adapted to use an ejection stream of raw fluid and gas to flutter, spread and vibrate the hollow fiber membranes during a filtering process, as is now featured in claim 1.

Instead, JP ‘074 merely discloses a hollow fiber membrane module with a housing 6. A plurality of hollow fiber membranes 7 having attached ends and free ends are positioned inside the housing. Ports are provided for introducing air (port 4) and fluid (port 1). (See FIG. in abstract) The hollow fiber membrane module includes a funnel shaped outlet 2. JP ‘074 does not mention using an ejection stream of raw fluid and gas to flutter, spread and vibrate the hollow fiber membranes during a filtering process, as featured in claim 1.

FIG. 6 of the Zha et al. patent discloses a porous tube 16 in the center of a membrane module 4 for passing air into the membrane module 4 to remove fouling materials from surfaces of fibers 9. However, the porous tube 16 does not create an ejection stream of raw fluid and gas to flutter, spread and vibrate hollow fiber membranes during a filtering process, as is now featured in claim 1. Instead, the porous tube delivers only air to the fibers 9. Additionally, the fiber's 9 motion is restricted by the cage 8 and by the potting heads 6, 7.

Even the asserted combination would not result in a filter device that uses an ejection stream of raw fluid and gas to flutter, spread and vibrate hollow fiber membranes during a filtering process, as is now featured in claim 1. Indeed, if the porous tube 16 of the Zha et al. patent were positioned inside the bundle of hollow fiber membranes 7 in JP '074 it would merely eject air (not raw fluid and gas as recited in claim 1).

Claim 2 should be allowable for at least the foregoing reasons.

Claims 4, 5, 7, 9-11 and 13-17 also were rejected under 35 U.S.C. §103(a) as unpatentable over JP '074 in view of the Zha et al. patent and JP '023.

Claims 4, 7, 13 and 14 have been amended in a manner similar to claim 2. Accordingly, those claims should be allowable for at least the same reasons as claim 2.

Claims 5, 9-11 and 15-17 depend from allowable claims and, therefore, should be allowable for at least that reason.

The amendment made to claim 17 merely clarifies the language.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or

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other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

No fee is believed to be due. However, please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

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